

DESCRIPTION OF PLATE XXXII.

Figs. 1 & 2. Male and female *Strongylus Awei*. $\times 25$ diameters.

Fig. 3. Side view of the tail of the male. $\times 65$ diam.

Fig. 4. Front view of the same. $\times 85$ diam.

Fig. 5. Side view of the lower end of the body of the female. $\times 65$ diam.

Figs. 6, 7, & 8. Head, portion of the body, and tail of the female. $\times 265$ diam.

Fig. 9. Tail and hood of the male. $\times 355$ diam.

Fig. 10. Plan of the hood, with its lobes and rays expanded. $\times 225$ diam.

a, head, and *a*^{*}, mouth; *b*, chitin-lines and lumen; *c*, closed œsophagus; *d*, muscular wall of same; *e*, *e*, chylous intestine or mid gut; *f*, rectum; *g*, anus; *h*, vulva; *i*, upper, and *j*, lower horn of uterus; *k*, *k*, ova; *k*^{*}, chitinous shell; *l*, *l*, cleavage-lines of yolk, and *l*^{*}, *l*^{*}, nuclei of cells; *m*, tail-cone of female; *n*, *n*^{*}, right and left spicules; *o*, accessory piece; *p*, *p*^{*}, right and left hood-lobes; *q*, *q*^{*}, upper and lower divisions of anterior ray; *r*, antero-lateral ray; *s*, *s*^{*}, upper and lower divisions of middle ray; *t*, postero-lateral ray; *u*, bifurcate extremity, and *u*^{*}, trunk of posterior ray; *v*, *v*, transverse striæ of integument.

Note.—All figures were outlined with the aid of a camera; the upper end of fig. 8 being a little out of focus, is a trifle too broad at that part.—T. S. C.

On *Slavina* and *Ophidonais*. By EDWARD C. BOUSFIELD,
L.R.C.P. Lond. (Communicated by Dr. J. MURIE, F.L.S.)

[Read 4th February, 1886.]

(PLATE XXXIII.)

THE recently published 'System und Morphologie der Oligochæten' of Vejdovsky contains many names new to science among the genera and species therein described; and among them the genus *Slavina*, formed to include the *Nais appendiculata* of D'Udekem, and, as identical with it, the *Nais lurida* of Timm. Succinct and clear description of species, adequate for identification, can hardly be said to be the strong point of Vejdovsky's work—possibly he is reserving it for the promised second part; but as in the case of *Slavina* the description is more clear than usual, and several figures are given, there can be little doubt, as I hope to show, that his *Slavina appendiculata* is identical with the species described by D'Udekem, but widely different from that described by Timm.

The species described by Vejdovsky has not come under my notice; but of the *Nais lurida* of Timm I have had many speci-

mens sent me from Oxfordshire and Wiltshire, and also by Mr. Bolton of Birmingham, the well-known dealer in natural-history objects.

The body is composed of 30 to 35 segments; the head rounded and thickly studded with sharp palpocils or tactile hairs; the integument thick and somewhat opaque, and the more so on account of the case, composed of organic débris, agglutinated by the secretion of the skin, in which it is usually enclosed. Through this case protrude the setæ and the peculiar papilliform appendages which are characteristic of the genus. The setæ of the ventral bristle-bundles are long and strong, curved like the old-fashioned long \int , with a shoulder at the junction of the outer third with the rest of the shaft, somewhat tapered off at the inner extremity, and with the outer end divided into two nearly equal teeth. It is worthy of remark that in these, as in many other Oligochæta, the teeth point backwards in the anterior segments, and forwards in the posterior; so that the worm possesses the power of resisting traction at either end, and of moving freely backward or forward. In the middle segments the teeth appear to be directed outward from the middle line.

The dorsal setæ are long and strong, usually straight, or nearly so. The first pair of bundles contain each one very long seta with a short hooked one (somewhat resembling the ventral setæ, but with the shoulder nearer the outer extremity). There may be a second capillary seta; but if so, it is usually not more than half the length of the primary one. The setæ of the remaining dorsal bundles are of the same length as the shorter one in the first pair; and all are usually straight, or nearly so.

The touch-organs (*Sinneshügel*) are elevations of the integument from which protrude several short palpocils, which, as shown in the drawing (fig. 4), are connected with special cells in the epidermis. Similar cells, in connexion with tactile hairs, occur in *Chætogaster*, where, after the use of weak osmic acid, I have been able to trace the nerve-fibre from the inner end, though without being able to make out its connexion with the general nervous system. As, however, I have seen multipolar ganglion-cells on the inner surface of the integument, there is doubtless a connexion between them and the nerve-fibres of the palpocils.

The touch-organs are arranged in rings on all the segments, rather more numerous on the first, though I have seen nothing

like the serrated margin shown in Vejdovsky's figure, reproduced in the drawing (fig. 3). As a rule, there is one ring round each of the first four bristle-bearing segments and two round each of the following, the one corresponding (as in the first form) with the position of the setæ, the second round the middle of the segment. The tail, like the head, is provided with a greater number somewhat irregularly disposed. These organs are usually wanting on the under surface, and each ring is composed of from six to eight.

The eyes are purple; the corpuscles of the perivisceral fluid oval, hyaline, showing no trace of granules, and very abundant.

These characters will, I think, suffice for the identification of the species; I pass, therefore, to show the differences between it and the *Nais appendiculata* of D'Udekem, to include which the genus *Slavina* was founded.

In this species the first pair of bristle-bundles on the dorsal aspect consist of two or three long fine bristles in each, with one or two shorter ones, so that there may be as many as from three to five in each; whilst the succeeding bundles each contain two or more short bristles, not exceeding in length the transverse diameter of their possessor, or but little exceeding it, being, according to Vejdovsky's account, so fine that it might be thought almost that they were absent.

The touch-organs are arranged in a single row round each segment, are much more numerous, as many as twenty in each ring, and are found on the under surface as well.

The eyes are brownish black; the number of segments and the character of the corpuscles of the perivisceral fluid are similar to those of the *Nais lurida* of Timm.

Whilst engaged in studying the characters of these worms, I received from Mr. Bolton several specimens of a worm which I was at first inclined to regard as a new species, which also possessed the touch-organs already described; but on further consideration I am inclined to refer it to the *Ophidonais serpentina* of Gervais, *Nais serpentina* of some other writers.

In the possession of a case formed of débris and mucous secretion, presence of touch-organs, and arrangement of alimentary canal, however, this species comes so near Vejdovsky's *Slavina*, that had he observed the touch-organs, he would probably either not have founded his new genus, or have done away with the genus *Ophidonais*.

The latter differs from other species of *Slavina* in the arrangement of the dorsal bristles and in its greater size.

The dorsal bristles are often wanting altogether in many of the segments ; about the middle of the worm they are generally arranged, for the space of a few segments, with some approach to regularity ; but in the anterior and posterior portions only an isolated segment here and there bears one, frequently unpaired. There is only one bristle in each bundle when present, a short straight bristle, slightly toothed at its outer extremity, which does little more than just appear through the integument, with a shoulder at about the junction of the outer fourth with the rest of the shaft.

The touch-organs are irregularly disposed, but usually more or less in rings, very numerous on the head, as shown in the drawing (fig. 5), less so on the body, whilst toward the posterior part they are often arranged almost in the same manner as in *Slavina lurida*. The eyes are blackish-brown, and the corpuscles of the perivisceral fluid spherical and granular. There are usually four streaks of greenish-brown pigmentary matter on the first five segments.

The above characters on the whole, I venture to think, justify the incorporation of this annelid with the genus *Slavina* ; the reasons for this course rather than the converse one of transferring the species of *Slavina* to the genus *Ophidonais*, being that the arrangement suggested by Gervais has met with but small favour ; and that as his genus *Ophidonais* includes but the one species, it seems preferable to do away with that rather than with the one proposed by Vejdovsky in the work which, after all, must at present be regarded as the standard of reference, containing, as it does, the only attempt which has hitherto been made to give a complete account of the Oligochæta as a whole.

I propose, therefore (retaining the specific names), to call the worm which I have last described *Slavina serpentina*, and the former one *Slavina lurida*, the following being a short *résumé* of the genus.

Family NAIDOMORPHA, *Vejdovsky*.

Genus SLAVINA, *Vejdovsky*.

Annelids provided with papilliform elevations of the cutis (touch-organs) usually arranged in rings ; inhabiting cases formed of débris agglutinated by a mucous secretion from the bodies of the bearers.

SLAVINA APPENDICULATA (*Vejdovsky*).Nais appendiculata, *D'Udekem*.

Segments 30-40. The dorsal bristles, except the first pair, short and fine, more than two in each bundle; the first pair very long, each composed of three or more long setæ. Corpuscles of perivisceral fluid oval and hyaline. One ring of touch-organs on each segment.

SLAVINA LURIDA.

Nais lurida, *Timm*.

Segments 30-40. The first pair of dorsal bristles long and stout, not more than one long one in each bundle, sometimes a second of half the length, which is also the length of the succeeding ones, and of which there are not more than two in each bundle. The touch-organs usually in two rings on each segment. Perivisceral corpuscles oval and hyaline.

SLAVINA SERPENTINA.

Ophidonais serpentina (*Gervais*).

Segments 70-80. Dorsal bristles short and straight, frequently wanting. Touch-organs irregularly arranged on anterior segments, on posterior usually as in *S. lurida*. Perivisceral corpuscles spherical and granular. Usually four pigment-bands on first five segments.

BIBLIOGRAPHY.

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 ——. Mém. Acad. Roy. Belg. (1859), xxxi. p. 21.
 TIMM.—Arbeit. Zool.-zoot. Inst. Würzb. (1883), vi., pl. i. & ii.
 VEJDOVSKY.—Thierische Organismen der Brunnenwasser von Prag, 1882.
 ——. System u. Morphologie der Oligochaeten, 1885, p. 30.
 GRUITHUISEN.—N. Act. Nov. Curios. (1828), xiv. p. 407 (*Nais escharosa*).

DESCRIPTION OF PLATE XXXIII.

- Fig. 1. *Slavina lurida*. Ventral view, from life. × 90.
 2. *S. appendiculata*. After D'Udekem, Bull. Acad. Roy. Belg. 1855.
 3. *S. appendiculata*. After Vejdovsky, Syst. u. Morph. pl. iii. fig. 17.
 4. Section of touch-organ. After Vejdovsky, *l. c.* pl. iii. fig. 21.
 5. *Slavina serpentina*. Side view, from life. × 100.
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Fig 5



Fig 2

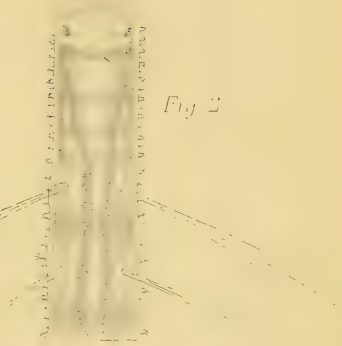


Fig 3



Fig 4

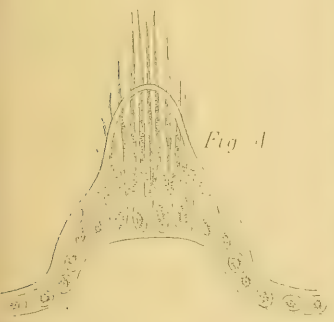
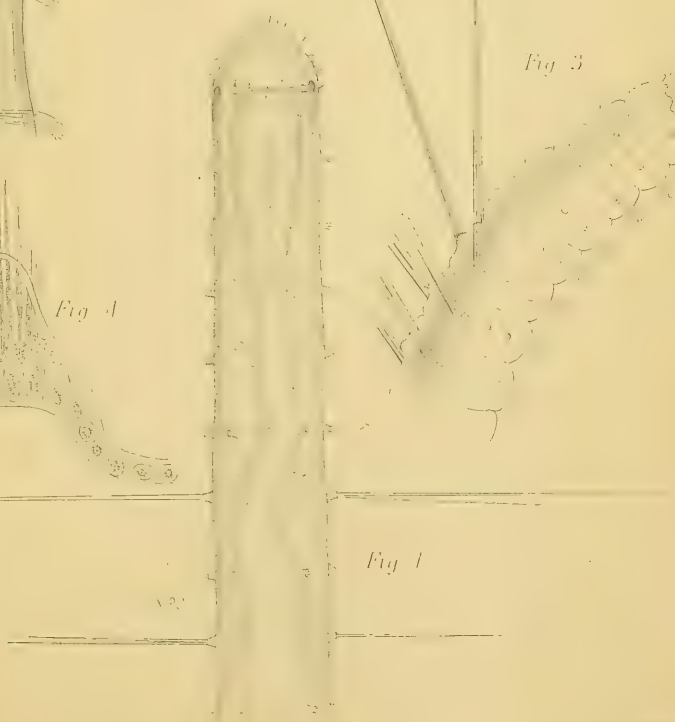


Fig 1



1. SLAVINA LURIDA. 2-4 S. APPENDICULATA. 5. S. SERPENTINA.